

EDIBLE INSECTS REPORT 2025

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Overview

Entomophagy, the practice of consuming insects as food, is widespread across many cultures. In contrast to Western societies, most other countries, particularly in tropical regions, consume insects either as a regular part of the diet or as delicacies (Rao, 2022; Lacey, 2016). While still gaining traction in the West, insect farming has the potential to become a profitable and sustainable agricultural venture. Edible insects can be raised for human consumption and as feed for livestock, poultry, fish, and pets (Sayner, 2020). Beyond their market value, edible insects contribute to ecological sustainability through pollination, organic waste decomposition, and biological pest control by harvesting edible pest species (Aidoo, et al., 2023).

Among the various insects farmed for consumption, crickets are considered one of the most promising for widespread human acceptance, with their nymph and adult stages being edible (Sayner, 2020; Magara, et al., 2021). According to Big Cricket Farms, the European house cricket (*Acheta domestica*) is not only tasty but also nutritionally superior to other edible cricket species (Anthropocene Magazine, 2014; Meticulous Research, 2024). These crickets contain approximately 65% protein and 20% fat (Lacey, 2016).

Applications

Crickets can be prepared in diverse ways, including deep-frying, boiling, dry-roasting, baking, or grinding into flour for various dishes (Sayner, 2020). Consumers are increasingly driving the popularity of cricket-based products as demand for sustainable protein sources grows (Kubala, 2021).

Cricket Flour or Powder

Insect powders dominate the edible insect market because of their versatility and convenience; they can be added to protein shakes, bars, baked goods, and pasta, fortifying the foods without changing flavor (Grand View Research, 2025). Taste surveys have consistently shown that cricket flour is an acceptable way to incorporate crickets into food (Lacey, 2016). When used in pasta, its texture is comparable to the gritty texture of whole wheat pasta (Hartwick, 2017). Nutritionally, cricket flour is rich in vitamin B-12, potassium, calcium, magnesium, selenium, fatty acids, protein, and iron, which is more easily absorbed from crickets than beef (Lacey, 2016; Hartwick, 2017). It also adds a nutty flavor to baked goods while boosting their protein content (Faster Capital, 2025).

In one study, biscuits enriched with 20% cricket flour were twice as digestible as regular biscuits. Although their physical properties remained unchanged, they differed in protein, dietary fiber, ash, and carbohydrate content (Bas & El, 2022). Numerous studies have explored the use of cricket flour in bread, biscuits, cookies, muffins, pita chips, and other baked goods (Amoah, et al., 2023). Many conclude that incorporating a percentage of cricket flour into wheat or other flour enhances overall acceptability, increases protein,

fiber, ash, and fat content (Ho, et al., 2022; Bawa, Songsermpong, Kaewtapee, & Chanput, 2020).

Edible Cricket Snacks

A growing variety of edible insect snacks is on the market, and crickets are leading the way. One popular option is cricket chips, available in flavors like barbecue, sour cream and onion, and sea salt. These chips are a protein-rich, nutritious alternative to traditional potato chips (Faster Capital, 2025). Protein bars made with cricket flour are also gaining traction. They combine insect protein with nuts, seeds, and fruit to create a sustainable, high-protein snack (Faster Capital, 2025). Several companies now offer roasted crickets in bold flavors. For example, Criketeer features barbecue, chili lime, and taco mixes, while Don Bugito offers chili lime and dark chocolate varieties. In one study, replacing 10% of tapioca starch with cricket flour in baked chips resulted in a high-protein snack containing over 15 grams of protein per 100 grams of product (Cheng, Leong, & Chang, 2022). The rising demand for nutritious and convenient snacks for health-conscious and fitness enthusiasts is increasing the demand for edible insect protein snacks (Grand View Research, 2025).

Pet Food and Animal Feed

Insect-based diets are emerging as a highly nutritious and sustainable alternative to conventional protein sources such as soybean meal and fish meal in pet food formulations for dogs, cats, rabbits, reptiles, sugar gliders, birds, and ornamental fish (Ahmed, Inal, & Riaz, 2021). More than 50% of global insect production is directed toward the pet food industry (European Pet Food Industry, 2024). Insects can be incorporated into pet diets in various formats, including whole, live, dehydrated, dry, or wet food and treats. They have been widely accepted by both pets and their owners (Valdés, et al., 2022). Research also indicates that insect-based diets may be an effective protein alternative for dogs with food intolerances (Ahmed, Inal, & Riaz, 2021). Additionally, there is a growing shift from fish meal to insect meal, driven by concerns over the sustainability and reliability of fish meal supply (Alfiko, Xie, Astuti, Wong, & Wang, 2022).

Market Growth

According to Meticulous Research (2024), the edible insect market is estimated at USD 1.9 billion in 2024 and projects USD 28.54 billion in 2035, a CAGR of 28.1% from 2025 to 2035. Of that, the cricket market is valued at \$997 million in 2024 and is expected to reach \$5,923.4 million by 2031, a CAGR of 29% (Meticulous Research, 2024). North America is currently dominating the edible insect revenue share, with the US dominating the North American Market, despite higher consumption in Africa, Asia, and Latin America. This is due to substantial investment, growing demand from health-conscious consumers, significant pet and animal feed use, developing high-value products branded as premium and sold through mainstream retail channels, and modern marketing strategies (Grand View Research, 2025). The processed cricket market is broken down into processed whole cricket, protein supplements, animal feed and pet food products,

protein bars and protein shakes, bakery products and snacks, beverages, and other applications. Protein shakes and bars are expected to have a 31% CAGR due to consumer preference for ready-to-eat foods that manage weight loss, increase energy, and boost immunity (Meticulous Research, 2024).

The Edible Cricket Supply Chain

The edible cricket supply chain moves through four main stages: breeding and rearing, harvesting and processing, distribution and marketing, and consumption. Each involves distinct practices and stakeholders that collectively transform crickets from farmed insects into food and feed products.

Breeding and Rearing

In the breeding and rearing stage, insect farmers produce edible crickets for human and animal consumption. Crickets are suitable for mass production because they reproduce quickly, have minimal risk of transmitting zoonotic diseases, and demonstrate an exceptionally high feed conversion ratio. They feed on plant and animal matter and thrive on a diet balanced in proteins, fats, carbohydrates, vitamins, and minerals. Crickets reach maturity in approximately six to seven weeks under proper conditions: warmth, humidity, and hygiene. Optimal growth occurs at about 82°F (28°C), with breeding and rearing cycles typically lasting 30 to 45 days. At the end of each cycle, pens are cleaned to prepare for the next production phase (Siddiqui, Tiantian Zhao, Rahmadhia, Alirezalu, & Fernando, 2024).

Harvesting and Processing

Once crickets reach maturity, they are harvested and processed into food or feed products. Depending on the intended use, processing methods include blanching, steaming, oven-drying, freeze-drying, and defatting. Crickets may be packaged as whole dried or frozen insects, or they can be milled into cricket flour, which serves as a versatile ingredient in protein-rich foods (Siddiqui, Tiantian Zhao, Rahmadhia, Alirezalu, & Fernando, 2024).

Distribution and Marketing

After processing, cricket products are supplied to retailers, online platforms, and direct-to-consumer outlets. Beyond human food markets, crickets are sold to zoos, research institutions, pet stores, and bait shops, with companies increasingly exploring partnerships with restaurants and chefs. Influencers, chefs, and sustainability advocates play a vital role in marketing, helping to normalize insect consumption by showcasing crickets in creative culinary applications and emphasizing their environmental and nutritional benefits (Meticulous Research, 2024; Lentz, 2022).

Consumption

On the consumer side, cricket products are available in various formats. For humans, cricket flour is used in protein shakes, snack bars, baked goods, and savory snacks, or crickets are consumed whole. For animals, crickets are offered live or dried to reptiles, amphibians, and exotic pets, while cricket flour is incorporated into dog and cat food. (Meticulous Research, 2024).

Rural Economic Development

Growing awareness of edible insects presents rural communities and farmers with the opportunity to lead a production system that is both economically viable and environmentally sustainable (Melgares, 2025). As the sector develops, it is expected to create jobs in areas that face persistent labor shortages due to the seasonal nature of traditional agriculture and the impact of automation. Unlike many crops, insect production operates year-round, offering consistent employment and buffering farmers against seasonal labor gaps (USDA. REEIS, 2021).

Insect farming can strengthen rural economies by repurposing underutilized infrastructure such as barns and warehouses. Mobile insect processing units can be easily deployed within these spaces, providing farmers a cost-effective way to diversify income while promoting environmental sustainability. Integrating these systems into small- and mid-sized farms enables rural communities to revitalize existing facilities and leverage their proximity to agricultural production as a steady source of inputs for insect rearing (USDA. REEIS, 2021; Suckling, Druckman, & C D Moore, 2020). Some examples of cricket farms and processing facilities in rural areas include Ovipost, a long-standing, rural indoor operation in LaBelle, Florida, a rural town of about 5,000 people. Another example is Youngstown, Ohio, the largest warehouse-based facility for crickets raised for human consumption. Another is the HouTex Cricket Farm in Katy, Texas, the largest cricket farm in Texas, specializing in live *Acheta domesticus* crickets for the pet and feeder market.

Examples like Revier Family Farms illustrate the diverse market opportunities in rural areas. They sell frozen crickets locally, supply live crickets to zoos, research institutions, pet stores, and bait shops. They are also exploring partnerships with restaurants. Beyond food and feed, crickets also provide organic fertilizer for gardening, showing the potential for niche product development and multiple revenue streams (Lentz, 2022).

Climate Adaptation

The livestock industry contributes more greenhouse gases than the combined output of planes, automobiles, and trains, highlighting the urgent need for sustainable protein alternatives (Meticulous Research, 2024). One promising solution is the adoption of high-quality insect-based proteins, such as crickets, which reduce pollution, habitat loss, and the strain on natural resources (Meticulous Research, 2024).

Edible insects are gaining popularity as healthy and environmentally friendly substitutes for traditional meat and dairy products (Aidoo, et al., 2023). Crickets stand out as a highly efficient, low-impact protein source. Crickets emit significantly fewer greenhouse gases than conventional livestock and require far less land and water (Aidoo, et al., 2023; Lacey, 2016; Magara, et al., 2021). Although specific data on cricket water consumption is limited, it is believed to be substantially lower than that of beef, which requires approximately 2,640 gallons of water per pound (Lacey, 2016).

Crickets are also remarkably resource-efficient. They need 12 times less food, 15 times less land, and 2,000 times less water to produce the same amount of protein as cattle, while emitting 100 times fewer greenhouse gases (Meticulous Research, 2024). Their cold-blooded nature allows them to grow using less energy and nutrients than warm-blooded animals like cows, pigs, and chickens. For example, “producing 1 kg of live crickets requires just 1.7 kg of feed, compared to 2.5 kg for chicken, 5 kg for pork, and 10 kg for beef” (Lacey, 2016, p. 12).

In addition to their efficiency, crickets offer better food utilization. A larger portion of the insect is edible than just 40–55% of traditional livestock, reducing food waste (Aidoo, et al., 2023; Lacey, 2016). Cricket-based animal feed can also replace expensive ingredients like soybeans and fishmeal, potentially lowering the cost of livestock production and freeing up valuable crops for human consumption (Meticulous Research, 2024).

Another advantage is that crickets can be raised on organic waste, providing a nutritious, low-energy feed source while helping to reduce landfill waste and environmental contamination (Skrivervik, 2020; Lacey, 2016; Meticulous Research, 2024).

Opportunities and Challenges

Opportunities

The edible insect industry has significant growth potential, particularly through expansion into the animal feed and pet food sectors (PR Newswire, 2025). Demand for sustainable, nutrient-rich proteins and healthy oils far exceeds current global insect production capacity to such an extent that no single farm can meet the scale required for widespread commercialization in aquaculture feed, pet food, or poultry feed (Larouche, et al., 2023). Increasing production consistency through multiple farms, automation, and pooled outputs could enable greater market penetration (Larouche, et al., 2023; PR Newswire, 2025).

With North America leading the edible insect market, partly due to rising investment in insect farming technologies, farmers can earn more by producing organic or specialty insect products and using automated farming technologies, which can improve efficiency and support the production of high-quality insect ingredients (PR Newswire, 2025). Integrating insect-based ingredients into plant-based foods and familiar food forms is also

gaining traction, especially in developed markets with advanced processing infrastructure (PR Newswire, 2025).

The lack of insect-specific regulations remains an opportunity. Historically, insects were classified as contaminants or adulterants in food, and production standards for human consumption are still absent in the United States (Aidoo, et al., 2023); (Anthropocene Magazine, 2014). Like in Europe, which is supported by progressive regulatory frameworks, clear regulatory frameworks would reduce uncertainty and support market expansion (Aidoo, et al., 2023; PR Newswire, 2025). Strategic partnerships between food producers, environmental advocates, and regulators could standardize practices, improve transparency, and boost consumer trust, positioning insect-based products alongside premium, sustainably branded goods (Ant Sauce, 2025).

Challenges

Despite the promising growth of the edible insect market, consumer acceptance for human consumption remains the primary barrier to the adoption of crickets and other insect-based foods. This reluctance is shaped by unfamiliarity, disgust, appearance, odor, taste, and texture (Lin, Lim, Ng, & Teo, 2025). Research has shown that direct experience can help overcome feelings of disgust (Lange & Nakamura, 2021). For example, a taste study involving cricket flour buns found that product sampling, coupled with consumer education on health and environmental benefits, significantly improved acceptance and reduced psychological resistance (Pambo, Okello, Mbeche, Kinyuru, & Alemu, 2018). Strategic branding and appealing flavors can further boost willingness to try insect-based foods (Ant Sauce, 2025).

Allergies present another challenge. A notable portion of the population may be allergic to certain insects, particularly crickets (Lange & Nakamura, 2021). Studies suggest that individuals allergic to shellfish or dust mites could also react to insect protein (Ribeiro, Cunha, Sousa-Pinto, & Fonseca, 2017). While current evidence is limited, further research is needed to fully understand the prevalence and severity of such allergic reactions (Kubala, 2021).

Food safety is also a critical concern. Edible insects can carry parasites and harmful microorganisms that may be transmitted to humans and animals. This underscores the need for strict hygiene standards and regular farm monitoring. Proper processing methods, such as cooking, drying, acidifying, freezing, smoking, and curing, can help mitigate these risks (Aidoo, et al., 2023; Gałęcki & Sokół, 2019). It is worth noting that insects are not unique; many zoological food-based ingredients face similar safety challenges.

Operational challenges also affect insect farming. Seasonal temperature fluctuations can significantly impact production rates, with output dropping significantly in cooler months (Person, 2023). Additionally, cricket farms often face infestations from unwanted insects such as spiders and beetles, which thrive in the warm, humid conditions designed for

crickets. Because no targeted pesticides exist for these pests, farmers must rely on manual removal methods such as smashing or vacuuming (Person, 2023).

Conclusion

Including insects as part of the diet offers the US a pathway toward a more sustainable food system while contributing to reductions in greenhouse gas emissions. Although insect consumption is safe and common in many parts of the world, changing perceptions will be essential for consumer acceptance in the Western world. This can be achieved through creative marketing, educational campaigns, and innovative product development. The economic ripple effects are promising for rural communities, where insect farming can utilize existing infrastructure and create jobs across the supply chain, from production to processing, while reducing reliance on environmentally costly livestock. Integrating insects into a diverse range of products, snacks, seasonings, and animal feed can open multiple market channels, enhance food security, and promote environmental stewardship. However, the industry's success hinges on collective action: consumers embracing insect-based proteins, policymakers streamlining regulations to foster innovation, and businesses investing in scalable, affordable solutions. With the sector's leadership in the North American market, insect farming has the potential to become both an economic driver and a cornerstone of a more sustainable, resilient rural economy.

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